

## **Air Quality LS 5.2**

### **How Can Chemical Reactions Be Used To Improve Air Quality**

Read page 259

#### **Stop and Think**

1. Sketch what happens in a smokestack when lime water spray is used. Show the inputs (what goes in) to the smokestack, the chemical reaction and where it happens, and what happens to the products of the chemical reaction.
  
  
  
  
  
  
  
  
  
  
2. Sketch what happens in a smokestack when plain water spray is used. Show the inputs (what goes in) to the smokestack, the chemical reaction and where it happens, and what happens to the products of the chemical reaction.

#### **Cleaning Up the Products of Internal Combustion Engines**

Read this section then answer the following questions.

Why is it more difficult to remove pollutants from the exhaust of a car compared to removing the pollutants from a factory or a power plant?

#### **How Can Chemical Reactions Be Sped Up?**

Read and follow the procedure on page 261. Record your observations on your *Speeding Up Chemicals Reactions* page.

## Speeding Up Chemical Reactions

5.2.1

Name: \_\_\_\_\_ Date: \_\_\_\_\_

	Test tube A	Test tube B
Observations without manganese dioxide		
Observations after adding manganese dioxide		

## Analyze Your Data

1. What chemical reaction was happening when you first added the hydrogen peroxide to the test tube?
2. What evidence do you have that the manganese dioxide increased the speed of the reaction?
3. Manganese is an example of a catalyst. Describe what you think a catalyst does.

## How Do Catalysts Work?

- Read this section on page 262.
  1. What is a catalyst?
  2. What is the activation energy?
  3. How does a catalyst affect the activation energy?

## How Are Catalysts Used to Remove Pollutant Gases From Air?

- Read page 263
  1. What is the function of catalytic converters?
  2. What metals are used in catalytic converters? Why are they used?

- Read the first three paragraphs on page 264.

3. What are the two steps that the catalytic converter uses to reduce pollution?

1.

2.

- Read the last paragraph on page 264 and the first paragraph on the top of page 265.

4. What is the function of the oxygen sensor?

## **Reflect**

1. Although the technology for catalytic converters was available long ago, converters began to be added to cars only in 1975. Why do you think automobile manufacturers might not have wanted to put catalytic converters in cars?

## **Other Ways Catalysts Are Used to Reduce Pollution**

- Finish reading page 265

## **What's the Point?**

- Read page 266 and summarize the main ideas of this learning set in 2 to 3 sentences.